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APPLICATION NO. FILING DATE		FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	
09/755,660 01/05/2001		01/05/2001	Roy Franklin Quick JR.	PA010055	4954	
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Qualcomm Patents Dep	•	rated	MOORTHY, ARAVIND K			
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San Diego,	CA 9212	21-1714	2131	a.		
				DATE MAILED: 11/21/2003		

Please find below and/or attached an Office communication concerning this application or proceeding.

4

Application No.   Applicant(s)   Od/755,680   OUICK ET AL						11				
Examiner	i.		Application	No.	Applicant(s)	7 - (				
Period for Reply  A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE of THIS COMMUNICATION.  A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.  Edurations of time may be available under the previous of 3 CFR 1.136(s). In no event, however, may a reply be limitely filled  Eduration of time may be available under the previous of 3 CFR 1.136(s). In no event, however, may a reply be limitely filled  Eduration of time may be available under the previous of 3 CFR 1.136(s). In no event, however, may a reply be limitely filled or eply specified above & less than thirty (30) days, a reply with the statutory minimum of thirty (30) days will be considered timely.  If the period for reply is specified above & less than thirty (30) days, a reply with the statutory minimum of thirty (30) days will be considered timely.  If the period for reply is specified above & less than thirty (30) days and will again Style (30) MONTh? from the mailing date of this communication, even if limitely filled, may reduce any senter period time adjustment. Sea 3 CFR 1.70(4).  Status  1) ☑ Responsive to communication(s) filed on 12 June 2003.  2a) ☐ This action is FINAL.  2b) ☑ This action is non-final.  3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.  Disposition of Claims  4) ☑ Claim(s) ☐ 1.21 is/are pending in the application.  4a) Ø the above claim(s) ☐ is/are withdrawn from consideration.  5) ☐ Claim(s) ☐ 1.21 is/are rejected.  7) ☐ Claim(s) ☐ 1.22 is/are rejected to.  8) ☐ Claim(s) ☐ 1.22 is/are rejected to.  9) ☐ Claim(s) ☐ 2.21 is/are rejected to.  10) ☐ The drawing(s) filed on 04 May 2001 is/are: a) ☑ accepted or b) ☐ objected to by the Examiner.  Application Papers  9) ☑ The specification is objected to by the Examiner. Note the attached Office Action or form PTO-152.  Priority un		0.55	09/755,660		QUICK ET AL.					
Preiod for Reply  A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.  Ederacións of bina may be available under the positiones of 3 CFR 1.136(a). In or ovent, however, may a reply be limbly filled  If the period for reply appendix above is less then thirty (30) days, a capty within the salutely remirrence of their (30) days will be operated to reply appendix above, he maximum statutory period will be part and the parts (30) MONTH for the mailing date of this communication.  Fallow be reply verbine the sole or advancée period for reply will, by attents, cause the application to become ABANDONED (39 U.S. 5 ± 133).  This particle for reply appendix above, he maximum statutory period will be part and the previous (5) (6) MONTHS from the mailing date of this communication, event if the part (5) (a) days will be operated the part of the part (5) (a) days will be operated the part of the part (5) (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c		Office Action Summary	Examiner		Art Unit					
A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.  Extensions of limin may be available under the grovisions of 37 CFR 1.13(b). In no event, however, may a rapily be limitly filled  If the period for raply specified above, the maintern statisticary period will apply and will expire 31X (b) MONTHS from the mainting date of this communication for raply specified above, the maintern statisticary period will apply and will expire 31X (b) MONTHS from the mainting date of this communication.  Failise to pray updating the specified above, the maintern statisticary period will apply and will expire 31X (b) MONTHS from the mainting date of this communication.  Failise to pray within the set or extended painted for rapily will, by statistic, once the application to become ASHANCHOOL 50 3U.S.C.§ 1330, contrared patient term adjustment. See 37 CFR 1.704(b).  Status  1) ☑ Responsive to communication(s) filled on 12 June 2003.  2a) ☐ This action is FINAL.  2b) ☑ This action is non-final.  3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parts Quayle, 1935 c.D. 11, 453 O.G. 213.  Disposition of Claims  4) ☑ Claim(s) 1-22 its/are pending in the application.  4) ② The above claim(s) is a same and a set of the application.  5) ☐ Claim(s) 1-22 its/are rejected.  7) ☐ Claim(s) 1-22 its/are objected to.  8) ☐ Claim(s) 1-22 its/are objected to.  9) ☑ The specification is objected to by the Examiner.  10) ☑ The drawing(s) filed on 94 May 2001 is/are: a) ☑ accepted or b) ☐ objected to by the Examiner.  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.85(a).  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.85(a).  Replacement draw				<u>-</u>	<u> </u>					
THE MAILING DATE OF THIS COMMUNICATION.  Estencions of time may be available under the provisions of 37 CR 1.13(b). In no event, however, may a reply be limely filed after 5X (6) MCNTIST from the mailing date of this communication.  If the provide or neyly evident here hailing date of this communication.  If the provide or neyly evident here are contended partner of the communication or neyly within the station or newly station or new			n appears on the c	over sheet with the c	orrespondence addres	3S				
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#### **DETAILED ACTION**

1. Claims 1-21 are pending the application.

2. Claims 1-21 have been rejected.

# Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Local Authentication of Mobile Subscribers Outside their Home Systems.

# Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 4. Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Rogaway U.S. Patent No. 5,491,749.

As to claim 1, Rogaway discloses a memory and a processor configured to implement a set of instructions stored in the memory [column 10, lines 24-42]. Rogaway discloses generating a plurality of keys in response to a received challenge [column 7 line 39 to column 8 line 55]. Rogaway discloses generating an authentication signal based on a received signal and a first key from the plurality of keys [column 8, lines 33-47]. Rogaway discloses that the received signal is transmitted from a communications unit communicatively coupled to the subscriber identification module [column 8, lines 33-47]. Rogaway discloses that the received signal is

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generated by the communications unit using a second key from the plurality of keys [column 8, lines 48-67]. Rogaway discloses that the second key has been communicated from the subscriber identification module to the communications unit [column 9 line 26 to column 10 line 54]. Rogaway discloses transmitting the authentication signal to the communications system via the communications unit [column 9 line 26 to column 10 line 54].

As to claim 2, Rogaway discloses that the authentication signal is generated by a hash function [column 9, lines 1-22].

As to claim 4, Rogaway discloses that the authentication signal is generated by an encryption algorithm [column 9, lines 35-62].

As to claim 5, Rogaway discloses that the encryption algorithm is the Data Encryption Standard (DES) [column 9, lines 35-62].

5. Claims 6-14, 16-19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Reeds, III U.S. Patent No. 5,204,902.

As to claim 6, Reeds discloses a key generation element [column 4, lines 32-46]. Reeds discloses a signature generator configured to receive a secret key from the key generation element and information from a mobile unit, and further configured to output a signature to the mobile unit [column 5, lines 25-33].

As to claim 7, Reeds discloses a memory and a processor configured to execute a set of instructions stored in the memory [column 4, lines 27-31]. Reeds discloses that the set of instructions performs a cryptographic transformation upon an input value to produce a plurality of temporary keys [column 4, lines 27-31].

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As to claim 8, Reeds discloses that the cryptographic transformation is performed using a permanent key [column 6, lines 3-23].

As to claim 9, Reeds discloses a memory and a processor configured to execute a set of instructions stored in the memory, as discussed above. Reeds discloses that the set of instructions performs a cryptographic transformation upon the information from the mobile unit by using the secret key [column 6, lines 3-23]. Reeds discloses that the signature results from the cryptographic transformation [column 5, lines 25-33].

As to claim 10, Reeds discloses a key generator for generating a plurality of keys from a received value and a secret value [column 4, lines 32-46]. Reeds discloses that at least one communication key from the plurality of keys is delivered to the communications unit and at least one secret key from the plurality of keys is not delivered to the communications unit [column 4, lines 32-46]. Reeds discloses a signature generator for generating an authorization signal from both the at least one secret key and from an authorization message, as discussed above. Reeds discloses that the authorization message is generated by the communications unit using the at least one communication key [column 6, lines 36-60].

As to claim 11, Reeds discloses that the subscriber identification module is configured to be inserted into the communications unit [column 4, lines 27-31].

As to claim 12, Reeds discloses that the signature generator generates the authorization signal by using a hash function [column 6, lines 36-60].

As to claim 13, Reeds discloses that the signature generator generates the authorization signal by using the Data Encryption Standard (DES) [column 9, lines 28-44].

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As to claim 14, Reeds discloses that at least one communication key comprises an integrity key [column 10, lines 18-24].

As to claim 16, Reeds discloses generating a plurality of keys, as discussed above. Reeds discloses transmitting at least one key from the plurality of keys to a communications device communicatively coupled to the subscriber identification device and holding private at least one key from the plurality of keys, as discussed above. Reeds discloses generating a signature at the communications device using both the at least one key transmitted to the communications device and a transmission message, as discussed above. Reeds discloses transmitting the signature to the subscriber identification device [column 9, lines 1-25]. Reeds discloses receiving the signature at the subscriber identification device [column 9, lines 47-63]. Reeds discloses generating a primary signature from the received signature [column 9, lines 47-63]. Reeds discloses conveying the primary signature to a communications system [column 9, lines 47-63].

As to claim 17, Reeds discloses that the generating of the signature signal is performed using a nonreversible operation. As discussed above the signature is created with a hash. The examiner asserts that a hash is a nonreversible operation.

As to claim 18, Reeds discloses that the generating of the signature signal is performed using DES, as discussed above.

As to claim 19, Reeds discloses that the generating of the signature signal is performed using a hash function, as discussed above.

As to claim 21, Reeds discloses generating a plurality of keys, as discussed above. Reeds discloses transmitting at least one key from the plurality of keys to a communications device communicatively coupled to the subscriber identification device and holding private at least one

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key from the plurality of keys, as discussed above. Reeds discloses assigning a weight to the transmission message at the communications device in accordance with a relative importance of the transmission message [column 9, lines 28-44]. Reeds discloses generating a signature at the communications device using both the at least one key transmitted to the communications device and the transmission message, as discussed above. Reeds discloses transmitting the signature to a communications system if the assigned weight to the transmission message indicates that the transmission message is unimportant [column 10, lines 12-37]. Reeds discloses transmitting the signature to the subscriber identification device if the assigned weight to the transmission message indicates that the transmission message is important [column 10, lines 12-37]. Reeds discloses that the subscriber identification device generates a primary signature from the received signature signal, as discussed above. Reeds discloses conveying the primary signature to a communications system, as discussed above.

## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rogaway U.S. Patent No. 5,491,749 as applied to claim 1 above, and further in view of Applied Cryptography (hereinafter Schneier).

As to claim 3, Rogaway discloses using hash functions, as discussed above.

Rogaway does not teach that the hash function is the Secure Hash Algorithm (SHA-1).

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Schneier teaches the Secure Hash Algorithm (SHA-1) and its benefits [pages 442-445].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Rogaway so that the hashing function was the Secure Hash Algorithm (SHA-1)

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Rogaway by the teaching of Schneier because there are no known cryptographic attacks against SHA and it is more resistant to brute-force attacks [page 445].

7. Claims 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reeds, III U.S. Patent No. 5,204,902 as applied to claims 10 and 16 above, and further in view of Applied Cryptography (hereinafter Schneier).

As to claims 15 and 20, Reeds discloses using hash functions, as discussed above.

Reeds does not teach that the hash function is the Secure Hash Algorithm (SHA-1).

Schneier teaches the Secure Hash Algorithm (SHA-1) and its benefits [pages 442-445].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Reeds so that the hashing function was the Secure Hash Algorithm (SHA-1)

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Reeds by the teaching of Schneier because there are no known cryptographic attacks against SHA and it is more resistant to brute-force attacks [page 445].

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## Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aravind K Moorthy whose telephone number is 703-305-1373. The examiner can normally be reached on Monday-Friday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R Sheikh can be reached on 703-305-9648. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-1373.

Aravind K Moorthy November 14, 2003

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